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Deutschland auf die demografische Herausforderung vorbereitet?" ["Germany's Generational Accounts in International Comparison: How Well Is Germany Prepared for Demographic Change?"] Diskussionspapier Forschungszentrum Generationenverträge, Albert-Ludwigs-Universität Freiburg.

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## Comment David A. Wise

Axel Börsch-Supan has presented a very careful summary of the pension reforms in Europe. He brings out the substantial complexity of getting from here to there. And he emphasizes two critical dimensions of pension expenditures—the level of benefits and the duration of benefits. I cannot offer important areas of improvement in his discussion. Instead I will try to add additional framing and context to his analysis. In particular, I emphasize, and hope to contribute to, an understanding of the core of the problem that has led to the need for reform. In doing this, I will focus on working lives and years in retirement, the part that lies behind what Börsch-Supan terms the duration of benefits.

The core of the problem is promises that cannot be met—social security plan provisions that promise benefits that are often unsustainable. Why? Countries did not adjust to the demographic changes that occurred over the past four decades. They did not accommodate declining mortality and increasing life expectancy. And countries did not adjust to changing health. Expansions in “work capacity” were not matched by more work. It is now too late to address the problem only by saving more. Social and economic customs must adapt to demographic trends. I will expand on three points:

1. Living longer and working less without regard to demographic trends.
2. The relationship between employment of older workers and mortality (taken as one important indicator of health).

David A. Wise is the John F. Stambaugh Professor of Political Economy at the Kennedy School of Government, Harvard University, and area director, health and retirement programs, at the National Bureau of Economic Research.

Most of the figures used in this discussion were adapted from Gruber and Wise (1999, 2007) or Milligan and Wise (2012). Figure 10C.2 was adapted from a 2007 talk at the US State Department. For acknowledgments, sources of research support, and disclosure of the author's material financial relationships, if any, please see <http://www.nber.org/chapters/c12651.ack>.

3. The change in employment by mortality over time and the implications for employment.

I will not discuss it further, but I emphasize that working longer not only helps to pay for all costs associated with living longer—social security and health care, for example—but also other needs, such as education of the young for which expenditure may be driven out by increasing resources allocated to older persons.

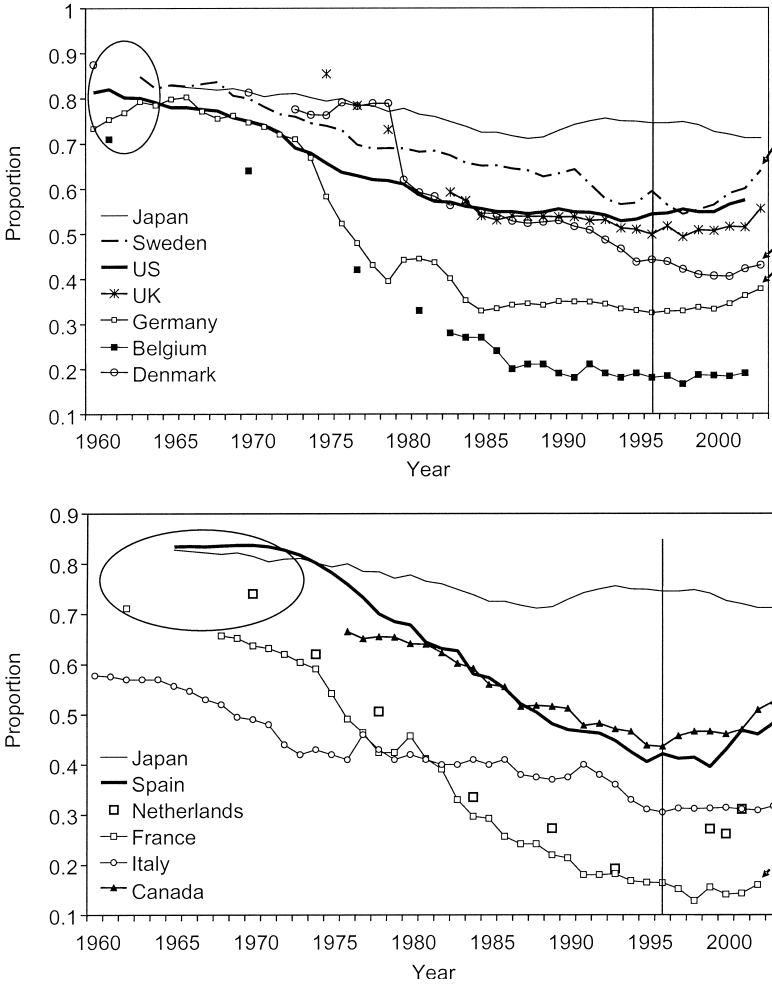
### **The Change in Work over Three or Four Decades**

First I will return to a figure that Börsch-Supan used in his chapter. The figure shows the labor force participation (LFP) trends for men aged sixty to sixty-four from the 1960s to the early 2000s—the data are shown for twelve countries in two parts in figure 10C.1. These figures are an adaptation of those presented in Gruber and Wise (2007). I emphasize three features of the data. First, in the early 1960s the differences in labor force participation rates across countries were relatively small, most between 70 and 85 percent. This feature is marked by circles in each of the figures. Second, by the mid-1990s, however, the difference had widened greatly, ranging from about 13 percent in France to about 75 percent in Japan. Third, the labor force participation rate started to increase in each of the countries in the mid-1990s, marked by vertical lines on each of the figures. Six of the twelve countries are marked with arrows and in these countries the increase can be associated with pension reforms, changes in the provisions of the plans. But the increase in labor force participation is common to all countries, suggesting that some of the increase may be due to other forces.

The decline in work was unrelated to, and in spite of, demographic trends. Figure 10C.2 (adapted from a talk at the US State Department 2007) shows the percent increase in life expectancy of men at sixty-five, paired with the decline in the labor force participation of men age sixty to sixty-four between the 1960s and early 2000s. For example, in the United States, life expectancy increased about 30 percent over this time period and labor force participation decreased by about 28 percent. In France, life expectancy increased by 37 percent and labor force participation decreased by 77 percent.

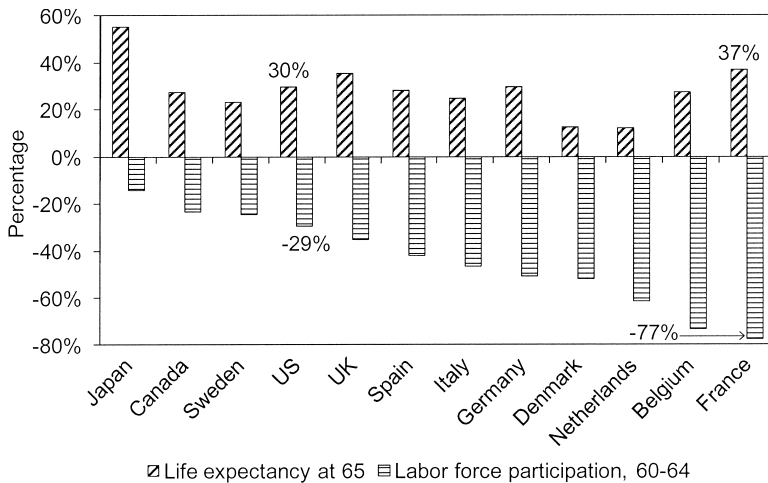
Thus, as life expectancy increased labor force participation was declining in all countries, but the change in labor force participation across countries was unrelated to demographic trends. Figure 10C.3 shows the relationship between the percent decline in labor force participation and the percent increase in life expectancy. Excluding Japan there is essentially no relationship between the two; even including Japan the relationship is not statistically meaningful.

However, the relationship is strongly related to social security plan provisions. Figure 10C.4 (Milligan and Wise 2012) shows the relationship between

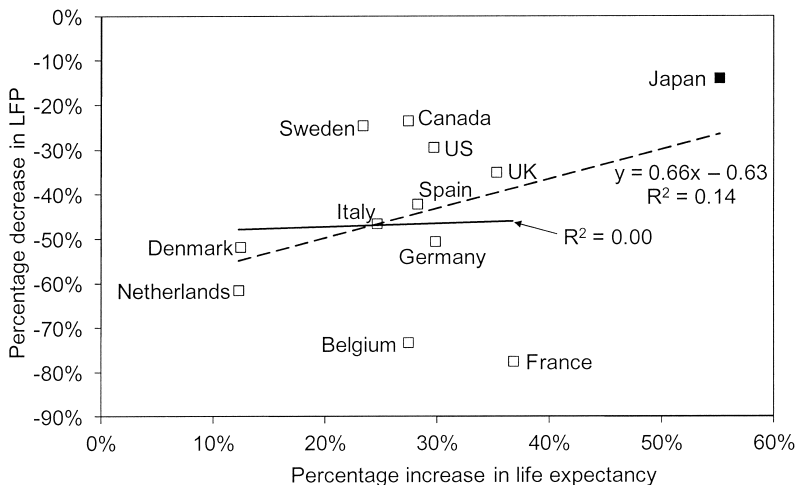


**Fig. 10C.1 LFP trends for men 60 to 64**

the percent decline in labor force participation and the “tax force to retire.” To understand this measure it is useful to think of wage compensation for working an additional year in two components. The first is wage earnings. The second component is the increase in the expected present discounted value of promised future social security benefits. It is natural to think of this difference as positive, or at least not negative. That is, if a person works for an additional year and thus forgoes one year of benefits, it might be expected that benefits begun one year later would be increased enough to offset the fact that they are received for one fewer years. In most countries, however, the accrual is significantly negative. This is a consequence in large part of

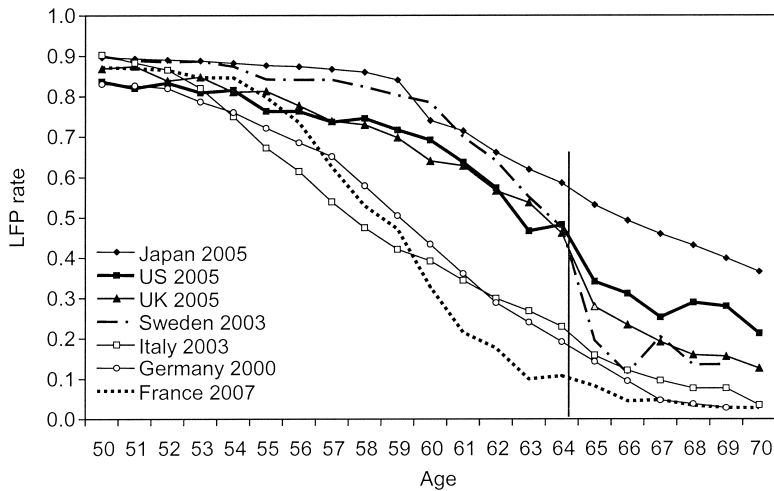


**Fig. 10C.2 Increase in life expectancy and decline in labor force participation of men, 1960s to early 2000s**



**Fig. 10C.3 Change in LFP versus increase in life expectancy at 65 for men in 12 countries**

not increasing benefits enough if the age of benefit receipt is delayed; that is, benefits are not actuarially fair. Thus the gain in wage earnings is partially, or even largely, offset by a loss in future social security benefits. The ratio of this loss to wage earnings (after tax) is called the social security implicit tax on earnings (Gruber and Wise 1999). In many countries this tax can be 80



**Fig. 10C.4** Employment by age for seven countries, men

percent or more at certain ages. To provide a simple summary of the country-specific incentives for early retirement, the implicit tax rates on continued work are summed from age fifty-five or at the early retirement age—when a person is first eligible for social security benefits—and running through age sixty-nine. This measure is called the “tax force” to retire (Gruber and Wise 1999). Figure 10C.4 shows that this measure—based on plan provisions in the mid-1990s—is strongly related to the decline in labor force participation over the prior three or four decades. That is, the decline in labor force participation was induced in large part by social security plan provisions.

### Employment by Age versus Employment by Mortality (“Health”)

I explain that the cross-country variation in both employment by age and employment by mortality are similarly related to social security plan provisions—the inducement to retire early inherent in social security plan provisions. Figure 10C.4 (adapted from Milligan and Wise 2012) shows the relationship between age and employment in seven countries. Two features of the figure stand out. First, at ages in the early fifties there was little difference across countries in the employment rate. But by age sixty-four the difference had widened greatly, ranging from about 10 percent in France to almost 60 percent in Japan.

Now consider employment by mortality. Figure 10C.5 (adapted from Milligan and Wise 2012) shows this relationship for the same seven countries. Again two features of the figures stand out. First, at the ages at which the

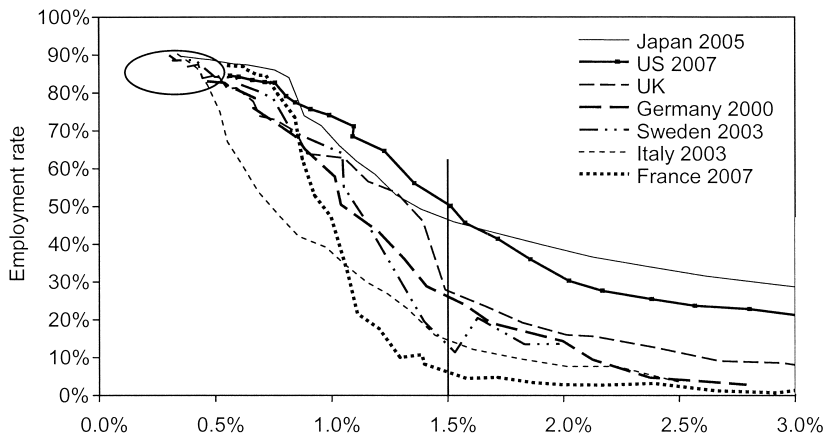


Fig. 10C.5 Employment versus mortality, selected countries, by one-year intervals

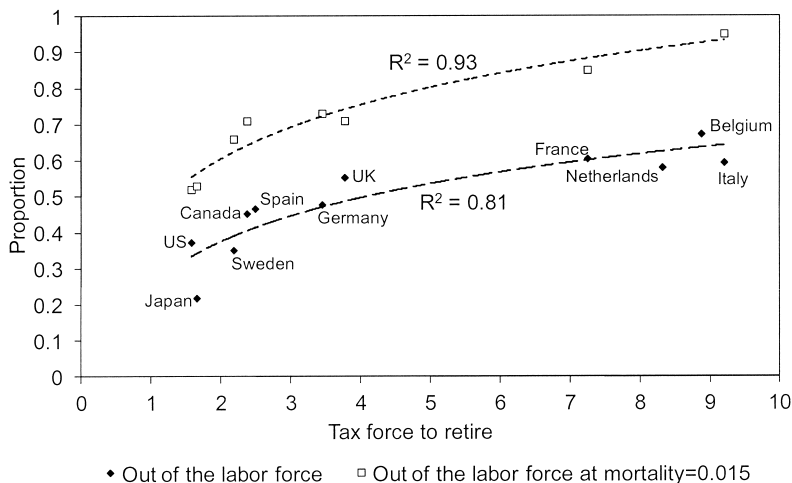
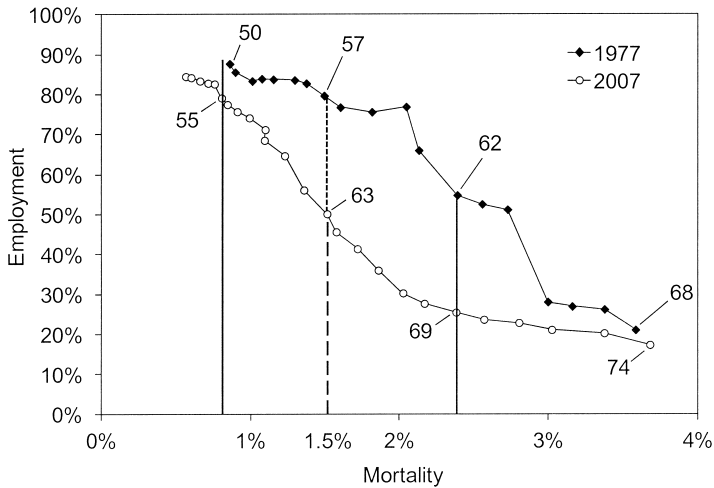


Fig. 10C.6 The tax force to retire versus: (1) men 55 to 65 not in the labor force, and (2) men not in the labor force when the mortality rate is 1.5 percent

mortality rate was about 0.5 percent, employment was very similar in all of the countries, approximately between 85 and 90 percent in each of the countries. But at the ages at which the mortality rate was 1.5 percent, the spread in the employment rate had become very large, from a low of 5 percent in France to about 50 percent in the United States.

Now consider these two relationships: (1) the relationship between the tax force to retire and the proportion of men fifty-five to sixty-five *not* in the labor force, and (2) the relationship between the tax force to retire and the proportion of men not in the labor force when the mortality rate is 1.5



**Fig. 10C.7** Employment by mortality, men in the United States, 1977 and 2007

percent. Both are shown in figure 10C.6 (adapted from Milligan and Wise 2012). The first relationship—the lower line in the figure—is as reported in Gruber and Wise (1999). The second relationship follows essentially the same pattern. That is, the incentive effects inherent in social security pension plans are a strong determinant of work by age and a strong determinant of work by health (mortality) and the one relationship essentially mimics the other. I conclude from these two relationships that mortality as a measure of health means the same thing in France and Italy as it does in the United States. If the tax force to retire were the same in France and Italy as in the United States the relationship suggests that work at older ages would be about the same in France and Italy as in the United States and work when health was the same (1.5 percent mortality) would be about the same in France and Italy as in the United States. Or put another way, if plan provisions were similar, work by mortality (“health”) would be about the same in Italy and France as in the United States, Canada, and Sweden.

### Change in Employment by Mortality

Figure 10C.7 (adapted from Milligan and Wise 2012) shows the employment rate by mortality in 1977 and 2007 in the United States, together with selected ages corresponding to the mortality rate in each year (adapted from Milligan and Wise 2012). For example, consider the employment rate when the mortality rate was 1.5 percent. In 1977, the employment rate was 80 percent—corresponding to age fifty-seven. In 2007, the employment rate was only 50 percent when the mortality rate was 1.5 percent—corresponding to age sixty-three. That is, the probability of being employed when the mortal-



ity rate was 1.5 percent was 0.8 in 1977 and 0.5 in 2007.<sup>1</sup> Thus, on average, at age sixty-three men worked 0.3 fewer years in 2007 than they did in 1977. If we add up such differences from age fifty-five to age sixty-nine, men in this age group worked on average 3.7 fewer years in 2007 than in 1977 (8.3 versus 12.0 years, a decline of 31 percent). In other words, if at each “health” level (measured by mortality) men had worked as much in 2007 as they did in 1977, average employment in the fifty-five to sixty-nine age range would have been 3.7 years greater in 2007 than it was.

Recall from figure 10C.2 that life expectancy of men at age sixty-five increased 30 percent between 1977 and 2007. Many analysts have suggested that official retirement ages—early social security and normal retirement ages—might be indexed in some way to life expectancy. If the average retirement age were in fact indexed to mortality, beginning in 1977, employment of men aged fifty-five to sixty-nine in 2007 would have been greater than employment in 1977.

The differences in employment by “health” between countries are also very large. For example, if employment by mortality level in 2007 had been the same in France as in the United States, employment in France in the fifty-five to sixty-nine age range would have been 4.62 years larger than it was.

In summary, the need for reform of social security systems now has developed over time because countries failed to adapt to the demographic tidal wave that rolled over most countries in the past four or five decades. Countries did not adjust institutional and economic policies to accommodate the demographic imperative, declining mortality and increasing life expectancy. Instead, living longer was accompanied by working less. Better health and expansions in “work capacity” were not matched by more work. Now, working longer will likely be a component of reform in virtually all countries, consistent with Axel H. Börsch-Supan’s excellent summary and discussion.

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1. Looking at the data another way, consider the age at which 50 percent of men were employed. In 2007, the mortality rate at the age when 50 percent of men were employed was 2.7 percent; thirty years later in 2007, the mortality rate was only 1.5 percent. That is to say, for the employment rate to be 50 percent in 2007, men “had to be” much healthier (by the mortality measure) than they were in 1977.